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Louisiana Energy Indicators

Center for Energy Studies

Louisiana State University Winter 1984

The Gas Supply Outlook for Onshore Louisiana

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Onshore Louisiana[1] produces substantially more gas than it consumes but has already produced a greater proportion of its ultimate recoverable reserves than other states. Thus Louisiana's share of reserves will likely diminish in the future. This article discusses the adequacy of onshore gas supply versus the state's prospective requirements. Despite the well-publicized gas surplus, our current thoughts on Louisiana's gas supply differ little from those previously published[2]—*access to offshore and out-of-state gas is essential to assure long-term gas supply adequacy for the state.*

Current Supply for Louisiana

At the end of 1983, onshore Louisiana had an estimated 17.5 Tcf of proved reserves, less than 9 times production in 1983. Both proven reserves and production have steadily declined since 1978, as new discoveries have fallen short of withdrawals from past discoveries. Proved onshore reserves in Louisiana dropped 17 percent between 1979 and 1983. In contrast, proved reserves for the remainder of the U.S. increased slightly.

Historically, the state has been largely but not entirely dependent on intrastate gas supply. Intrastate pipelines provide three-fourths of the state's gas supply. However, the majority of the state's proved reserves are dedicated to interstate pipelines. Only a fourth of the proved reserves were committed to intrastate pipelines.

Estimated Potential Gas Remaining in Louisiana

According to the latest available Potential Gas Committee estimates,[3] there are 21 Tcf of undiscovered gas reserves remaining in onshore South Louisiana, the predominate source of Louisiana's onshore gas. It is estimated that only 7 Tcf, or one-third, of these reserves are at depths less than 15,000 feet. Onshore Louisiana has but 3 percent of the established total undiscovered gas in the Lower 48 States, and less than 2 percent of the estimated remaining potential in shallow or intermediate horizons.

With the vast majority of national potential gas estimated to be in areas outside of onshore Louisiana, *it is expected that future gas exploration and development efforts will be increasingly concentrated in areas other than the traditional sources of supply for the Louisiana intrastate market.* This forseeable trend will be exacerbated by the generally more accessible drilling depths afforded by other areas.

The Outlook for Drilling and Discoveries in Louisiana

As a result of reduced demand for gas by pipelines and sharp declines in the prices of newly discovered gas—(particularly deep gas), rig use and gas well drilling in Louisiana have declined since 1981. We expect onshore Louisiana proved reserves to continue to decline over the next ten years. Through the late 1980's, indigenous production should be adequate to meet Louisiana's needs, but long term access to offshore gas—traditionally the domain of interstate pipelines—will be necessary thereafter. Louisiana industry relies extensively on natural gas for uses not readily converted to other fuels, reinforcing the importance of long-term gas supply reliability.

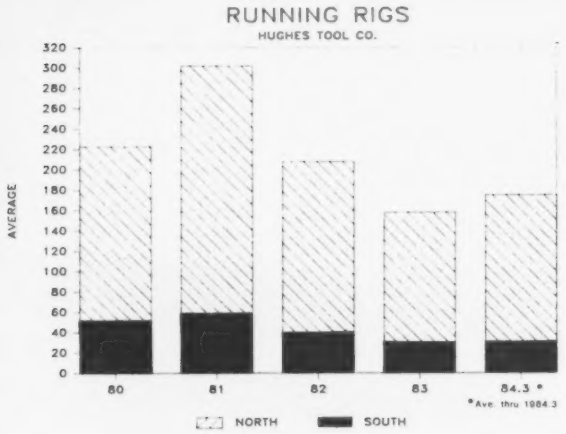
References

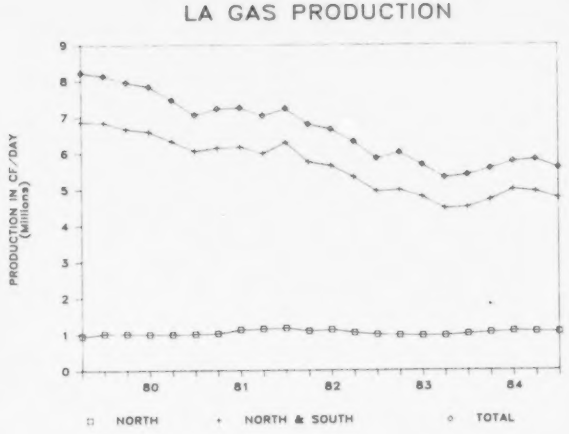
[1]As used herein, onshore Louisiana is defined as including the state but not the Federal offshore area. Reserves data with respect to the state offshore have been estimated by Foster Associates.

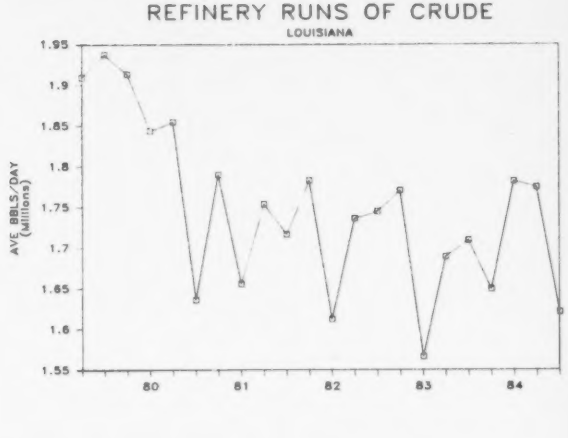
[2]Foster Associates, *The Impact of the NGPA on Intrastate Markets in Louisiana,* June 1982; Foster Associates, *Gas Supply, Demand and Price in Louisiana 1982-1990,* March 1983. The latter was a multiclient study currently being updated for release in the Spring of 1985—*Gas Supply, Demand and Price in Louisiana 1984-1995.*

[3]Potential Gas Committee. *Potential Supply of Natural Gas in the United States as of December 31, 1982.* Mineral Resources Institute, Colorado School of Mines. Golden, Colorado. June 1983.

Drilling







Figures represent TOTAL except when otherwise noted

Totals may not add due to rounding

Indicator	1979	1980	1981	1982	1983	1983.4	1984.1	1984.2	Jul	Aug	Sept	1984.3	Year to Date Through Last Month Reported Sept 1983.3	Year to Date Through Last Month Reported Sept 1984.3	% Change
CRUDE OIL ALLOWABLES (Ave.)															
North	104.6	105.8	112.4	113.2	115.4	114.4	110.1	115.7	110.5	110.5	109.1	114.0	115.7	110.0	0.3%
South	404.4	375.7	340.1	310.7	307.2	310.5	307.0	308.7	311.0	311.0	313.6	312.5	308.1	309.4	1.1%
Offshore	83.0	79.4	75.0	72.1	70.0	72.7	72.4	75.0	75.0	75.0	77.5	76.4	69.0	74.0	7.2%
Total	592.7	560.0	528.3	505.0	492.2	497.6	497.5	500.3	504.3	504.3	500.2	502.9	491.7	500.3	1.7%
GAS WELLS COMPLETED															
North	989	1,301	1,212	1,021	847	249	161	127	34	56	N/A	N/A	N/A	N/A	N/A
South	342	322	352	381	226	41	66	56	24	13	N/A	N/A	N/A	N/A	N/A
Offshore	30	40	31	39	25	5	2	0	3	7	N/A	N/A	N/A	N/A	N/A
Total	1,361	1,663	1,595	1,441	900	295	231	182	61	76	N/A	N/A	N/A	N/A	N/A
DRY HOLES DRILLED															
North	575	822	883	988	883	432	194	264	143	96	N/A	N/A	N/A	N/A	N/A
South	680	738	895	734	590	188	169	182	87	55	N/A	N/A	N/A	N/A	N/A
Offshore	36	51	52	38	52	13	10	12	5	3	N/A	N/A	N/A	N/A	N/A
Total	1,291	1,606	1,840	1,760	1,525	633	393	458	215	154	N/A	N/A	N/A	N/A	N/A
RUNNING RIGS (Ave. Hughes Tool)															
North	35	52	59	40	30	33	32	30	27	32	30	30	28	31	10.7%
South	180	171	243	189	128	141	158	138	140	134	137	137	124	147	18.5%
Offshore (Federal)	128	140	134	136	125	128	134	120	120	130	133	128	123	127	3.3%
Total	342	363	436	344	283	303	324	288	287	296	300	294	275	305	10.9%
DRILLING PERMITS ISSUED															
Exploratory	884	988	1088	727	845	222	131	176	77	52	N/A	N/A	N/A	N/A	N/A
Developmental	3725	5309	5195	4454	4849	1625	1225	1483	688	864	N/A	N/A	N/A	N/A	N/A
Total	4419	6297	6291	5181	5494	1847	1356	1579	765	916	N/A	N/A	N/A	N/A	N/A

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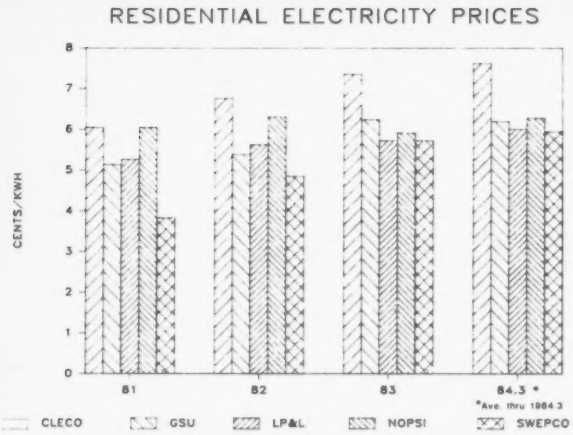
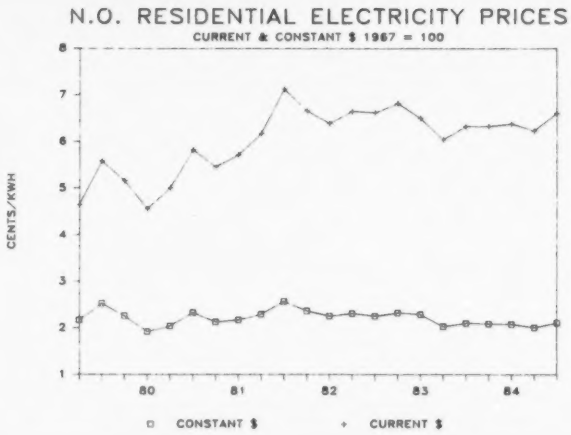
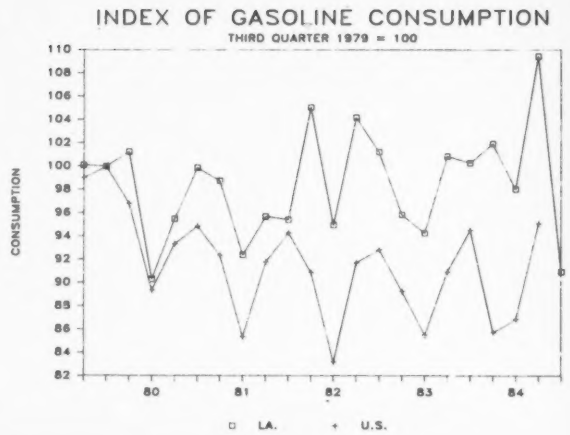
Production, Consumption & Employment







Figures represent TOTAL except when otherwise noted

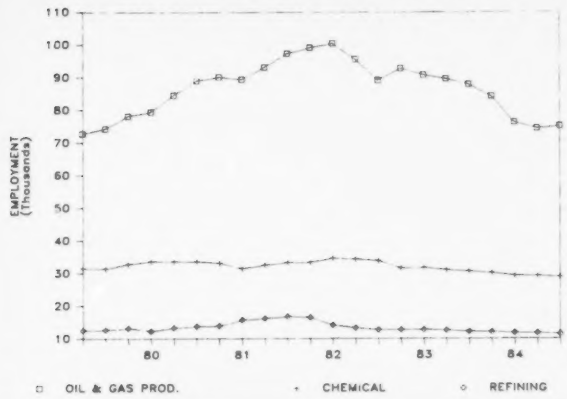
Totals may not add due to rounding

Indicator	1979	1980	1981	1982	1983	1983.4	1984.1	1984.2	Jul	Aug	Sept	1984.3	Year to Date Through Last Month Reported Sept 1983.3	Year to Date Through Last Month Reported Sept 1984.3	% Change
REFINERY RUNS (MMBPD) - Ave.	1.92	1.7	1.73	1.72	1.8	1.85	1.79	1.77	1.37	1.77	1.71	1.82	1.85	1.72	4.2%
GASOLINE CONSUMP. (Mil. Gal.)															
Louisiana	2,158	2,013	2,163	2,149	2,258	551	531	581	150	182	150	482	1,599	1,615	1.0%
U.S.	112,628	108,340	104,158	102,886	93,708	24,844	24,878	27,332	--	--	--	--	--	--	--
ELECTRICITY PRODUCTION (GWh) *															
Gas Generated	38,384	48,965	38,848	38,584	28,311	6,483	8,092	7,541	3,127	3,136	2,700	8,963	21,848	22,598	3.4%
Oil Generated	8,280	4,788	2,835	840	386	300	93	12	5	4	3	13	58	108	82.8%
Coal Generated	0	0	1,528	4,998	8,377	2,421	2,225	2,510	973	1,081	875	2,881	5,956	7,636	28.2%
Total Generated	48,654	45,743	44,111	41,532	37,044	9,184	8,480	10,063	4,106	4,133	3,578	11,877	27,860	30,340	8.9%
NATURAL GAS PRODUCTION (BCFPD) - Ave.															
North	0.97	1.00	1.13	1.03	0.99	1.05	1.08	1.08	1.08	1.05	1.03	1.05	0.97	1.07	10.3%
South	5.84	5.27	4.92	4.19	3.62	3.65	3.90	3.86	3.70	3.68	3.71	3.69	3.81	3.82	0.3%
Offshore	1.30	1.11	1.02	0.98	0.87	0.88	0.77	0.89	0.84	0.87	0.88	0.84	0.87	0.83	-4.6%
Total	8.11	7.38	7.07	6.20	5.48	5.58	5.75	5.81	5.62	5.58	5.54	5.58	5.45	5.72	5.0%
ELECTRICITY CONSUMPTION (GWh) *															
Residential	16,092	17,458	16,118	16,438	17,351	3,843	4,220	3,878	2,115	2,070	2,078	6,261	13,509	14,458	7.0%
Commercial	8,878	9,128	9,581	10,073	10,008	2,483	2,437	2,587	1,083	1,048	1,083	3,191	7,515	8,215	9.3%
Industrial	24,420	25,178	26,918	2,477	23,936	6,231	6,327	6,633	2,210	2,141	2,241	6,592	17,805	19,552	11.1%
Other	3,751	3,751	4,117	4,078	4,078	841	1,010	1,082	380	387	387	1,154	3,131	3,238	3.4%
Total	52,923	55,513	56,144	35,065	55,371	13,508	13,994	14,180	5,788	5,643	5,787	17,198	41,759	45,465	8.9%
EMPLOYMENT (Ave.)															
Oil and Gas Production (SIC13)	74.8	85.7	84.7	84.4	88.8	84.1	78.2	74.4	75.1	74.8	75.2	75.0	88.3	75.2	-15.8%
Chemicals and Allied Products (SIC28)	31.8	33.4	32.6	33.5	30.8	30.1	29.2	28.1	28.0	28.0	28.6	28.2	31.3	29.1	-7.0%
Petroleum Refining (SIC29)	12.5	13.2	10.3	13.1	12.3	12.0	11.7	11.7	11.7	11.3	11.2	11.4	12.4	11.6	-6.5%

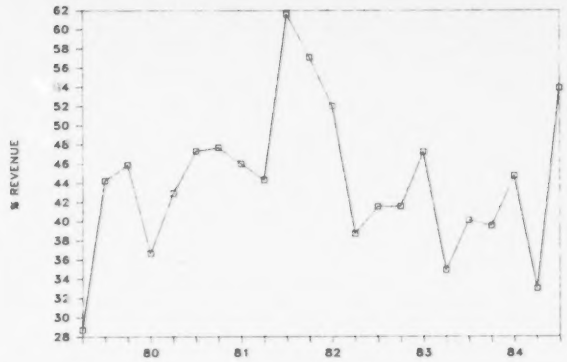
* 1 GWh = 1 million KWh

Prices & Revenues

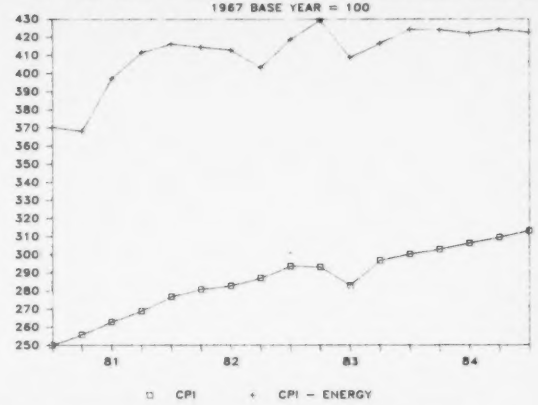
ENERGY RELATED EMPLOYMENT



ENERGY REVENUES AS % OF STATE TOTAL



CPI & CPI FOR ENERGY RELATED GOODS



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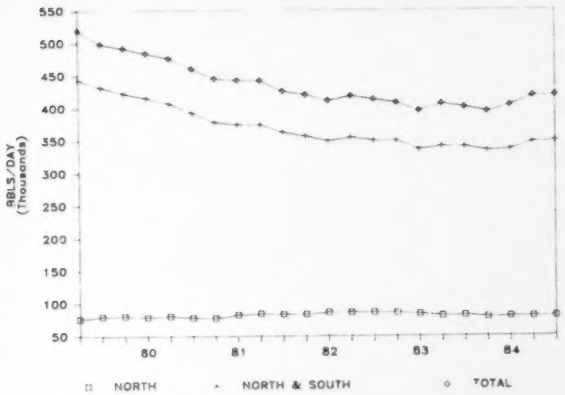
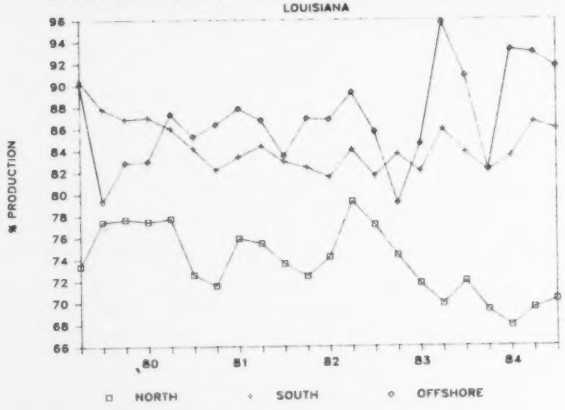
Indicator	1978	1980	1981	1982	1983	1983.4	1984.1	1984.2	Jul	Aug	Sept	1984.3	Year to Date Through Last Month Reported Sept 1983.3	Year to Date Through Last Month Reported Sept 1984.3	% Change
GASOLINE PRICES (Cents/Gal.)															
N.O. Ave. Retail Pump	100.07	113.57	131.3	124.2	121.2	121.2	120.8	121.5	107.5	128.0	128.2	128.2	120.8	123.5	2.2%
U.S. Ave. Retail Pump	88.11	119.87	131.1	127.9	121.5	122.2	120.9	122.5	119.0	119.1	120.5	119.8	121.7	121.0	-0.6%
NAT. GAS PRICES ($/MCF)-Ave.															
Interstate [1]	1.18	1.58	1.98	3.72	4.23	4.20	4.13	4.12	4.04	4.07	4.20[P]	4.10	4.25	4.12	-3.1%
Intrastate (A) [2]	2.14	2.70	3.40	3.71	3.77	3.75	3.80	3.72	3.78	3.70	3.68	3.72	3.78	3.75	-0.8%
Intrastate (B) [3]	1.66	2.06	2.58	2.80	2.96	3.07	2.87	2.81	2.85	2.79	2.79	2.81	2.83	2.83	-0.4%
PRINCIPAL ENERGY RELATED STATE REV.(Millions $)															
Sev. - Oil & Condensate	276.58	427.86	615.32	776.83	581.48	163.30	154.8	161.85	62.48	53.80	54.44	170.52	500.80	517.16	3.3%
Sev. - Natural gas	167.39	161.98	164.25	147.52	100.15	33.34	29.3	33.53	12.12	10.78	9.91	32.82	68.39	64.02	-5.4%
Bonuses	108.78	220.03	154.66	67.14	24.69	12.68	12.3	13.23	5.77	11.84	5.68	23.08	34.34	48.69	41.8%
Rentals	22.16	31.56	48.40	53.88	23.69	5.48	4.2	7.12	1.41	2.39	1.90	5.70	22.24	14.21	-36.1%
Royalties	184.49	262.82	414.66	482.71	357.80	105.85	108.1	108.84	38.42	26.38	33.83	98.64	338.24	325.24	-4.1%
Special Fuels Tax	22.16	22.80	24.75	25.53	19.83	7.05	7.1	7.88	3.38	4.09	4.11	11.58	20.07	26.63	32.7%
Gasoline Tax	158.56	161.44	165.81	162.28	117.88	41.78	38.7	41.78	16.48	23.86	28.26	68.70	116.16	146.30	24.4%
Nat. Gas Franchise Tax	4.78	6.58	7.78	8.61	8.84	2.72	3.1	3.00	0.78	2.34	0.88	3.13	9.82	8.20	-8.3%
Total Energy Revenues	970.84	1294.99	1763.41	1725.31	1135.18	372.01	378.8	377.3	148.8	135.2	138.1	414.2	1145.1	1183.4	3.3%
Total State Revenues (Millions $)	2288.5	3248.1	3000.2	3824.9	2748.8	842.8	981.8	1137.4	282.5	254.3	280.7	787.5	2882.1	2807.0	-0.8%
Energy Related Revenues As % of State Total	42.8	39.8	58.8	45.1	41.3	39.5	38.7	33.2	55.8	53.8	49.2	52.8	40.4	42.2	4.5%
Gross National Product (Billions $)	2628.8	2933.1	2957.7	3073.8	3518.5	3436.2	3550.1	3648.4	--	--	--	3701.2	3288.5	3832.8	11.1%
Producer Price Index	235.8	286.8	293.4	289.3	303.1	305.0	309.3	311.8	310.8	310.9	309.5	310.8	302.2	310.8	2.8%
Consumer Price Index	217.4	248.8	270.4	280.1	288.4	303.1	306.4	308.7	311.7	313.8	314.5	313.1	296.8	309.7	4.3%
Consumer Price Index - Energy	275.8	381.1	410.8	416.1	419.3	424.3	422.1	424.2	421.2	421.9	424.4	422.5	416.6	422.8	1.5%

P-Preliminary

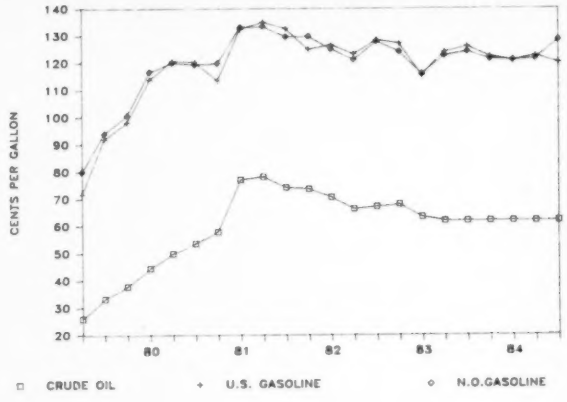
LA OIL PRODUCTION



CRUDE PRODUCTION AS % OF ALLOWABLE



GASOLINE & CRUDE OIL PRICES



Historical Presentation—Crude Oil

Figures represent TOTAL except when otherwise noted

Totals may not add due to rounding

Indicator	78.4	79.1	79.2	79.3	79.4	80.1	80.2	80.3	80.4	81.1	81.2	81.3
OIL WELLS COMPLETED												
North	150	85	80	234	258	178	185	254	311	298	243	254
South	85	63	81	82	86	58	73	81	80	72	73	86
Offshore (State)	19	5	7	12	4	9	3	4	4	4	2	9
Total	254	153	154	328	348	243	261	339	395	368	318	349
CRUDE OIL STOCK (MMBBLS)-Ave.	11.5	11.5	12.3	13.2	16.9	16.0	16.4	16.8	16.5	14.7	14.4	14.0
CRUDE OIL PRODUCTION (MBPD)-Ave.												
North	84.8	77.3	76.5	80.4	80.7	79.3	80.9	78.4	77.8	82.7	84.4	83.4
South	390.5	367.7	366.8	361.1	341.8	336.0	325.7	313.9	300.1	291.5	289.9	279.0
Offshore	78.2	74.0	75.8	69.3	69.0	66.2	69.2	67.3	66.8	69.1	67.3	62.7
Total	553.3	519.0	519.0	497.8	491.2	483.5	475.8	459.6	444.7	442.3	441.6	425.1
WELLHEAD PRICE OF OIL ($/BBL) - U.S. Ave.	9.28	9.66	10.91	13.99	15.89	16.67	20.84	22.49	24.32	32.36	32.82	31.15

Indicator	81.4	82.1	82.2	82.3	82.4	83.1	83.2	83.3	83.4	84.1	84.2	84.3
OIL WELLS COMPLETED												
North	245	256	318	321	283	393	231	372	409	366	548	N/A
South	83	81	89	81	89	72	79	75	89	112	103	N/A
Offshore (State)	6	1	4	13	6	2	4	10	8	31	23	N/A
Total	334	338	410	415	288	467	314	457	504	509	672	N/A
CRUDE OIL STOCK (MMBBLS)-Ave.	13.5	13.8	12.0	13.2	12.3	12.0	13.8	13.5	13.8	12.4	13.4	12.8
CRUDE OIL PRODUCTION (MBPD)-Ave.												
North	89.8	86.4	86.3	86.8	85.8	83.8	81.8	82.0	78.3	80.1	80.4	86.1
South	272.7	282.8	288.1	283.1	284.0	282.3	288.9	288.3	285.8	288.1	287.2	288.4
Offshore	63.5	61.7	63.4	62.9	57.7	59.4	64.8	65.8	59.8	67.4	70.6	70.8
Total	419.8	410.7	417.8	412.8	407.5	385.5	408.1	405.8	394.1	403.6	418.1	418.5
WELLHEAD PRICE OF OIL ($/BBL) - U.S. Ave.	30.60	29.85	27.81	28.20	29.52	26.57	25.97	25.99	26.00	26.01	26.01	26.03

FOOTNOTES

1. Industrial Sale Price by Major Pipeline Companies.
2. Intrastate A price was computed as the weighted average price charged by Louisiana Intrastate, Monterey, and Acadian gas transmission companies.
3. Intrastate B was computed by adding Texaco (27% market share at 34¢/MCF) to Intrastate A. Data on Texaco was taken from Foster and Associates THE IMPACT OF NGPA ON INTRASTATE MARKETS IN LOUISIANA, 1982. Data on the other three companies was supplied by the Louisiana Public Service Commission.

SOURCES OF INDICATOR DATA

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Heating and Cooling Degree Days (Not in this issue)

Louisiana Petroleum Activity Report. Monthly.
Drilling, Rig Activity, Oil and Gas Production, Refinery Runs and Stocks Data

Monthly Energy Review. U.S. Dept. of Energy. Energy Information Administration. Monthly.
Crude Oil Prices

Monthly Motor Gasoline Reported by States. U.S. Dept. of Transportation. Monthly.
Gasoline Consumption

Natural Gas Monthly. U.S. Dept. of Energy. Energy Information Administration.
Interstate Natural Gas Price Data

Oil and Gas Journal. Penn Well Publishing Company. Tulsa, Oklahoma.
Gasoline Prices

Survey of Current Business. U.S. Dept. of Commerce. Bureau of Economic Analysis. Monthly.
Gross National Product

Weekly Petroleum Status Report. U.S. Dept. of Energy. Energy Information Administration.
Crude Oil Prices

OTHER SOURCES

Hughes Tool Company.
Rig Activity.

Louisiana Department of Natural Resources. Office of Conservation.
Advanced Data from the LOUISIANA PETROLEUM ACTIVITY REPORT

Louisiana Department of Revenue and Taxation. Statement of Net Collections and Distributions. (Mimeograph)
Taxes and Revenues

Louisiana Public Service Commission. (Mimeograph)
Electricity Data.

Louisiana State Budget Office.
Taxes and Revenues

Louisiana State Planning Office. AMO8 Revenue Projections Model, Monthly Monitoring Report. (Computer Printout)
Taxes and Revenues

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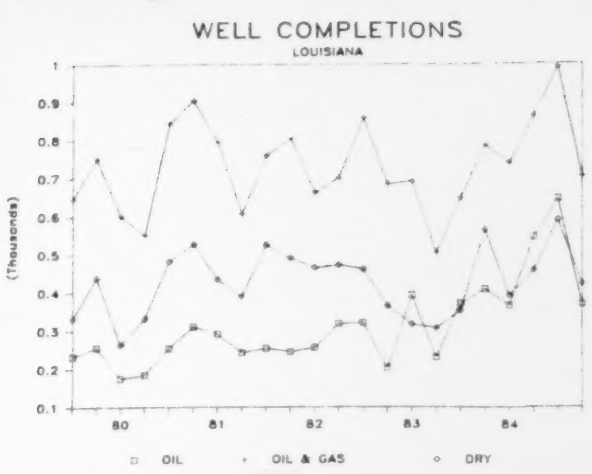
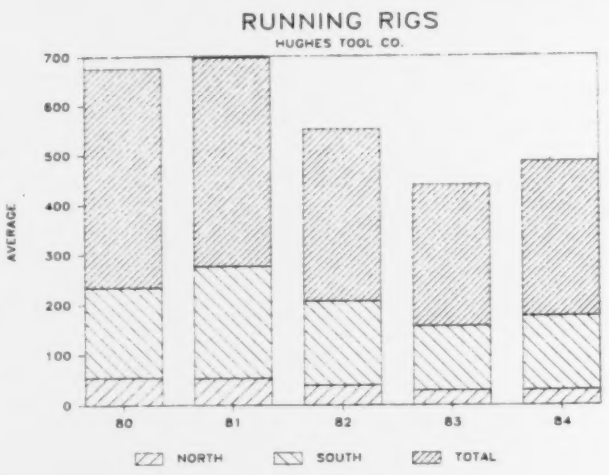
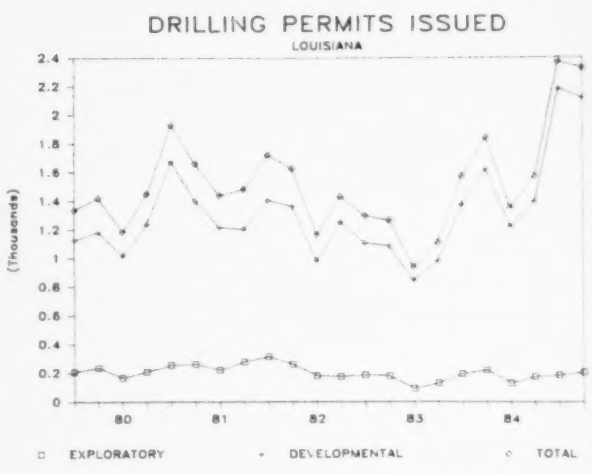
Drilling







Figures represent TOTAL
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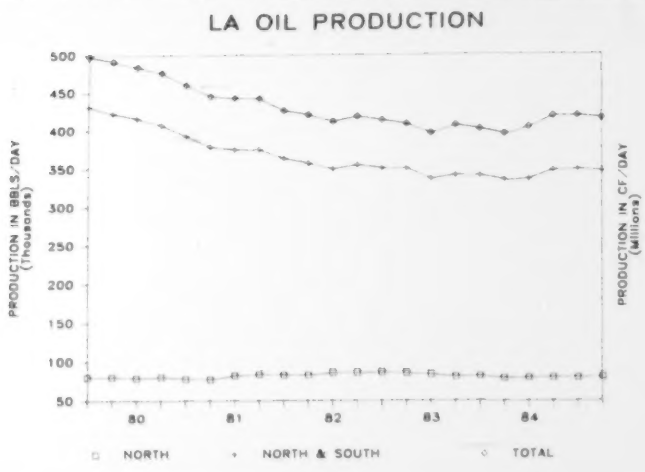
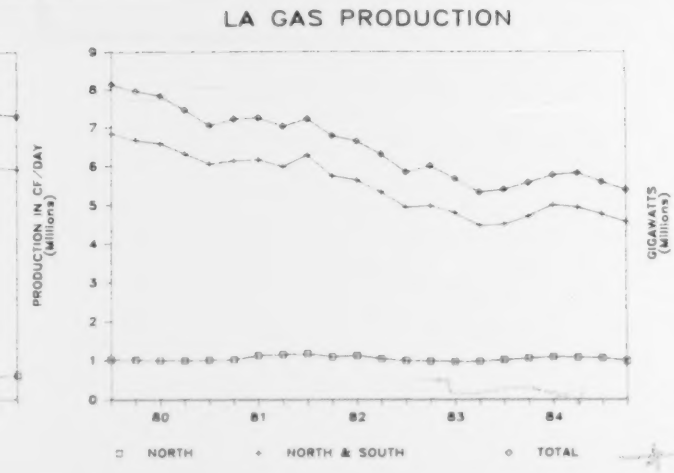
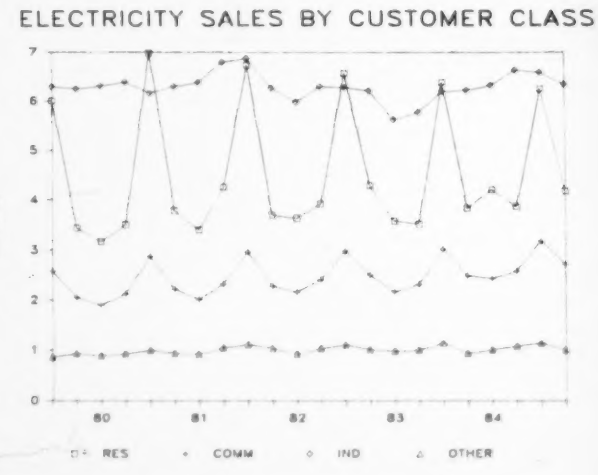
Totals may not add due to rounding

Indicator	1979	1980	1981	1982	1983	1984.1	1984.2	1984.3	Oct	Nov	Dec	1984.4	Year to Date Through Last Month Reported Dec 1983	Year to Date Through Last Month Reported Dec 1984	% Change
OIL WELLS COMPLETED															
North	841	926	1034	1098	1045	366	548	648	122	115	131	368	1405	1926	37.1%
South	272	282	317	339	315	112	103	106	27	21	36	84	315	405	28.6%
Offshore	28	20	18	24	22	31	23	18	1	5	11	17	22	89	304.5%
Total	941	1238	1389	1461	1382	509	672	770	150	141	178	469	1742	2420	38.9%
GAS WELLS COMPLETED															
North	989	1301	1212	1021	835	161	127	147	80	70	43	193	835	828	-1.1%
South	342	322	352	381	224	58	56	63	9	4	23	36	224	223	-0.4%
Offshore	30	40	31	39	25	2	9	12	0	0	5	5	25	28	12.0%
Total	1361	1663	1595	1441	884	231	192	222	89	74	71	234	884	878	-0.8%
DRY HOLES DRILLED															
North	575	822	883	988	915	194	264	400	78	66	84	248	915	1108	20.9%
South	680	733	895	734	575	189	182	190	44	33	88	165	575	716	24.5%
Offshore	36	51	52	38	52	10	12	10	3	1	5	9	52	41	-21.2%
Total	1291	1606	1840	1760	1542	393	458	590	125	120	177	422	1542	1863	20.8%
ACTIVE RIGS-WILDCATTING (Ave.)															
North	18	34	25	10	10	12	11	16	11	10	15	12	10	13	30.0%
South	38	60	58	32	30	35	38	31	36	52	39	42	30	36	20.0%
Offshore	4	7	6	3	3	1	2	1	0	1	4	2	3	1	-66.7%
Total	60	101	90	45	43	48	48	48	47	63	58	58	43	50	16.3%
RUNNING RIGS (Ave.Hughes Tool)															
North	35	52	59	40	30	32	30	30	28	30	30	28	29	30	3.4%
South	169	171	243	168	128	158	136	137	142	158	177	159	128	147	14.8%
Offshore (Federal)	138	140	154	136	125	134	120	128	142	148	152	148	125	132	5.6%
Total	342	363	456	344	283	324	286	295	312	338	359	336	282	309	9.6%
DRILLING PERMITS ISSUED															
Exploratory	694	988	1086	727	645	131	178	167	84	78	46	208	845	702	0.8%
Developmental	3725	5339	5195	4454	4845	1225	1403	2184	733	827	557	2117	4848	6929	42.9%
Total	4419	6237	6281	5181	5494	1356	1579	2371	817	905	603	2325	5494	7631	38.8%

Production & Consumption







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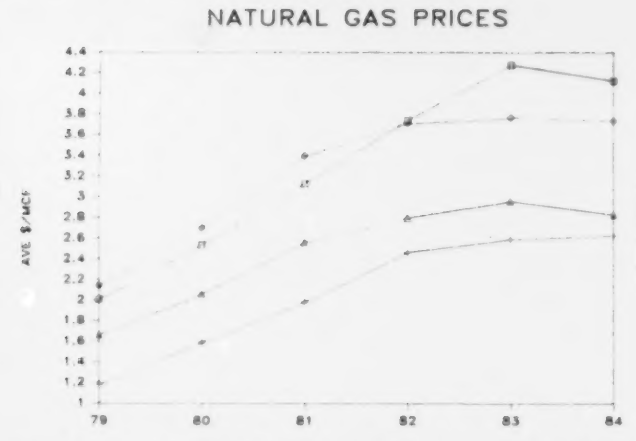
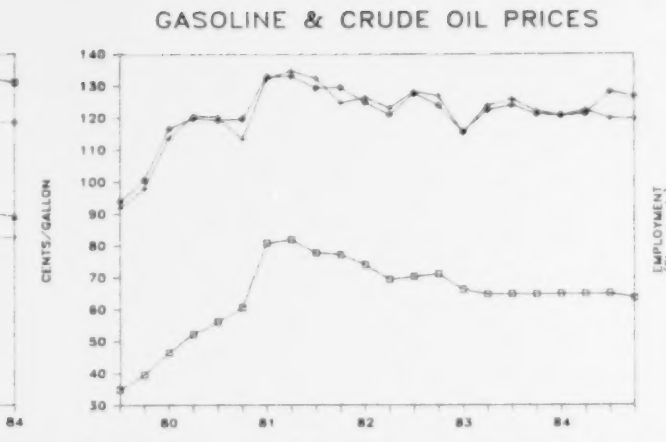
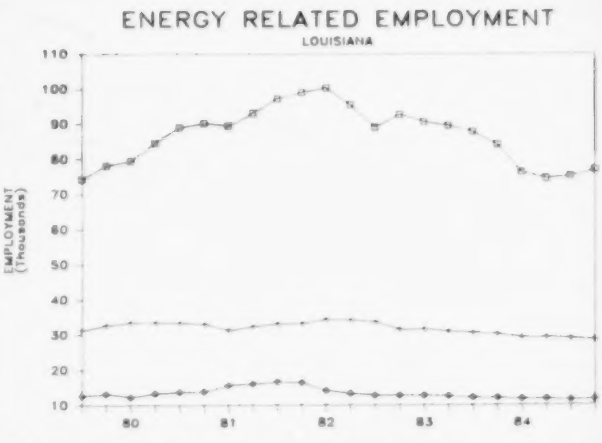
Indicator	1979	1980	1981	1982	1983	1984.1	1984.2	1984.3	Oct	Nov	Dec	1984.4	Year to Date Through Last Month Reported Dec 1983	Year to Date Through Last Month Reported Dec 1984	% Change
NATURAL GAS ALLOWABLES (MMCFPD) - Ave.															
Onshore	7.76	7.27	7.14	6.72	5.87	6.09	6.33	6.49	--	--	--	6.38	5.87	6.31	7.5%
Offshore	1.46	1.42	1.42	1.36	1.23	1.22	1.20	1.19	--	--	--	1.11	1.23	1.18	-4.1%
Total	9.22	8.69	8.56	8.08	7.10	7.30	7.53	7.67	--	--	--	7.47	7.10	7.49	5.5%
NATURAL GAS PRODUCTION (MMCFPD) - Ave.															
North	0.97	1.06	1.13	1.03	0.99	1.08	1.06	1.05	0.99	0.93	0.89	0.97	0.99	1.04	5.1%
South	5.84	5.27	4.92	4.19	3.62	3.90	3.86	3.68	3.24	3.62	3.83	3.56	3.62	3.75	3.8%
Offshore	1.30	1.11	1.02	0.88	0.87	0.77	0.89	0.84	0.82	0.82	0.81	0.82	0.87	0.83	-4.6%
Total	8.11	7.38	7.07	6.20	5.48	5.75	5.81	5.58	5.05	5.37	5.53	5.35	5.48	5.62	2.5%
CRUDE OIL ALLOWABLES (MBPD) - Ave.															
North	104.5	105.8	112.4	113.2	115.4	118.1	115.7	114.1	109.1	112.7	112.7	111.5	115.4	114.8	-0.5%
South	404.4	378.7	340.1	318.7	307.2	307.0	308.7	312.5	313.6	320.7	320.7	318.3	307.2	311.6	1.4%
Offshore	83.8	78.4	75.8	72.1	70.8	72.4	75.9	76.4	77.5	77.2	77.2	77.3	70.8	75.5	6.8%
Total	592.7	560.9	528.3	505.0	493.2	497.5	500.3	503.0	500.2	510.6	510.6	507.1	493.2	501.9	1.8%
CRUDE OIL PRODUCTION (MBPD) - Ave.															
North	78.7	78.1	83.5	86.3	81.6	80.1	80.4	80.1	81.4	80.1	81.0	80.8	81.6	80.4	-1.5%
South	356.8	318.9	283.3	264.5	256.4	256.1	267.2	268.4	269.3	265.1	262.3	265.6	256.4	264.3	3.1%
Offshore	71.2	67.6	65.4	61.4	62.3	67.4	70.5	70.0	71.1	67.7	66.8	68.5	62.3	69.1	10.8%
Total	506.7	465.9	432.2	412.2	400.3	403.6	418.1	418.5	421.9	412.9	410.1	414.9	400.3	413.8	3.4%
REFINERY RUNS (MMBPD) - Ave.	1.90	1.78	1.72	1.71	1.85	1.78	1.77	1.82	1.77	1.75	1.82	1.71	1.85	1.72	4.2%
CRUDE OIL STOCK (MMBBLS)-Ave.	13.5	16.4	14.2	12.8	13.2	12.4	13.4	12.8	13.5	13.7	14.5	13.9	13.2	13.1	-0.8%
GASOLINE CONSUMP. (Mil. Gal.)															
Louisiana	2,158	2,091	2,103	2,145	2,151	531	591	492	192	168	177	525	2,151	2,142	-0.4%
U.S.	112,628	106,340	104,158	102,735	104,231	25,005	27,467	27,869	--	--	--	--	104,231	--	--
ELECTRICITY CONSUMPTION (GWh)															
Residential	16,082	17,459	18,118	18,462	17,351	4,220	3,878	6,261	1,667	1,381	1,223	4,191	17,351	18,550	6.9%
Commercial	8,670	9,128	9,891	10,079	10,008	2,437	2,567	3,191	980	921	825	2,726	10,008	10,941	9.3%
Industrial	24,430	25,175	25,919	24,777	23,256	5,327	5,833	6,592	2,107	2,142	2,099	6,348	23,836	25,900	8.7%
Other	3,720	3,751	4,117	4,078	4,072	1,010	1,082	1,154	345	331	332	1,008	4,072	4,247	4.3%
Total	52,882	55,513	58,144	57,396	55,267	12,994	14,160	17,198	5,099	4,755	4,478	14,273	55,267	59,638	7.9%

Prices & Employment







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Indicator	1979	1980	1981	1982	1983	1984.1	1984.2	1984.3	Oct	Nov	Dec	1984.4	Year to Date Through Last Month Reported Dec 1983	Year to Date Through Last Month Reported Dec 1984	% Change
ELECTRICITY PRICES - Residential															
CLECO	4.5	5.1	6.1	6.8	7.4	7.4	7.6	7.8	8.0	7.9	7.5	7.8	7.4	7.6	2.7%
GSU	3.8	4.1	5.1	5.4	6.2	5.9	6.3	6.4	6.5	6.4	5.8	5.9	6.2	6.1	-1.6%
LP&L	3.0	4.1	5.3	5.6	5.7	5.5	6.1	6.4	6.3	6.3	6.1	6.2	5.7	6.1	7.0%
NOPSI	4.7	5.0	6.1	6.3	5.9	5.9	6.4	6.8	6.6	6.1	6.0	6.2	5.9	6.3	6.8%
SWEPCO	3.0	3.7	3.8	4.9	5.7	5.4	6.0	6.4	6.5	6.1	6.2	6.3	5.7	6.0	5.3%
GASOLINE PRICES (Cents/Gal.)															
N.O. Ave. Retail Pump	87.0	119.0	131.4	124.5	120.8	120.9	121.5	126.2	127.8	127.3	125.0	126.7	120.9	124.3	2.8%
U.S. Ave. Retail Pump	88.0	117.1	131.2	126.2	121.8	120.6	122.5	119.8	120.8	120.0	118.2	119.7	121.8	120.7	-0.9%
NAT. GAS PRICES ($/MCF)-Ave.															
Interstate [1]	2.01	2.54	3.13	3.75	4.28	4.13	4.11	4.07	4.06	4.26	4.22	4.18	4.28	4.12	-3.7%
Intrastate (A)[2]	2.14	2.70	3.40	3.71	3.77	3.80	3.72	3.72	3.67	3.78	3.73	3.72	3.77	3.74	-0.8%
Intrastate (B)[3]	1.66	2.08	2.56	2.90	2.86	2.87	2.81	2.81	2.77	2.83	2.82	2.81	2.86	2.96	-4.4%
WELLHEAD PRICE OF OIL ($/BBL) - U.S. Ave.	12.81	21.61	31.88	28.54	26.19	26.01	26.01	25.83	25.92	25.44	25.05	25.47	26.13	25.88	-1.0%
EMPLOYMENT (Thousands)-Ave.															
Oil and Gas Production (SIC13)	74.0	85.7	84.7	84.4	88.0	78.2	74.8	75.0	75.1	76.1	79.3	76.8	88.0	75.8	-14.1%
Chemicals and Allied Products (SIC28)	31.8	33.4	32.6	33.5	30.8	29.2	28.1	28.9	28.5	28.3	28.5	28.4	30.8	28.8	-6.2%
Petroleum Refining (SIC29)	12.5	13.2	16.3	13.1	12.3	11.7	11.7	11.4	11.2	11.8	12.0	11.6	12.3	11.8	-5.7%
Total Louisiana Employment	1564.8	1607.8	1687.9	1670.3	1656.8	1704.7	1761.0	1783.6	1784.0	1772.5	1767.7	1758.1	1656.8	1758.1	6.1%
Gross National Product (Billions $)	2628.8	2633.1	2937.7	3073.0	3310.5	3553.3	3644.7	3694.8	--	--	--	3782.5	3310.5	3881.3	10.8%
Producer Price Index	255.8	288.8	293.4	299.3	303.1	309.3	311.8	310.9	309.4	310.4	309.9	309.9	303.1	310.4	2.4%
Consumer Price Index	217.4	246.8	270.4	289.1	298.4	309.4	309.7	313.1	313.9	315.3	315.5	315.4	298.4	311.1	4.3%
Consumer Price Index - Energy	276.9	361.1	418.0	416.1	419.3	422.1	424.2	422.5	425.8	426.5	424.2	425.4	419.3	423.8	1.0%

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Louisiana Energy Indicators

Center for Energy Studies

Louisiana State University Spring 1985

OIL AND GAS REVENUES IN LOUISIANA

William G. Black, Economist
Louisiana Legislative Fiscal Office

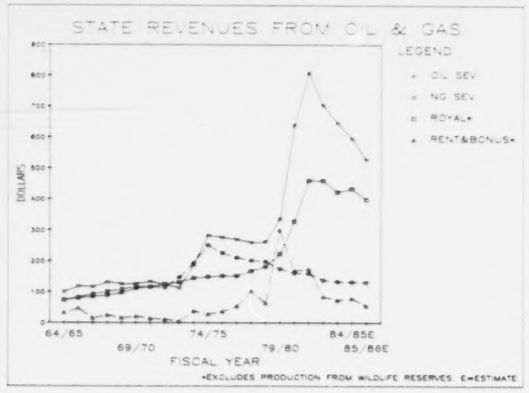
The State of Louisiana collects substantial severance taxes on oil, gas, and other petroleum liquids produced within the state. It also earns a substantial income from its mineral rights on state-owned lands, navigable water-bottoms, and coastal waters inside the three-mile territorial limit. Chart I reflects the history of these collections since the 1964-1965 fiscal year.

Since 1974, severance taxes have been levied on oil and condensate at a rate of 12.5 percent of value. Low volume oil wells and stripper wells qualify for reduced tax rates of 6.25 percent and 3.125 percent respectively. However, most production is from full rate wells; thus the average tax rate is about 12 percent. The tax on natural gas is $.07/MCF. As with oil, reduced rates exist for reduced volume wells; so the average rate is estimated at $.068/MCF.[1] State law also exempts natural gas applied to several specific uses from the severance tax.[2] Thus it is estimated that taxes are collected on 90 percent of total production.

The state earns mineral rights income in the form of bonuses, rentals, and production royalties. Bonuses are a cash payment for a one year lease of mineral rights. Annual rentals, which must be at least 50 percent of the initial payment, can be paid to retain the lease for a second or third year for inland leases or up to five years offshore if there is no drilling activity during this time. Once production begins, royalty payments maintain the lease as long as production continues. Historically, royalty payments have been one-sixth of the value of production. In recent years, oil companies have frequently bid higher royalty percentages so that the State's average royalty share is now somewhat greater than 16.67 percent of production value.

As shown in Chart I, oil and gas revenues have not performed uniformly over the past 20 years. Severance tax collections were boosted dramatically with the 1974 rate changes, but during the mid-1970's oil price controls and declining oil and gas production caused overall collections to decline. With the price shocks of 1979 and deregulation in 1981, oil and gas severance taxes rose rapidly to a total of $968.7 million in FY 1981-82. Since that time, severance collections have fallen substantially.

Chart I

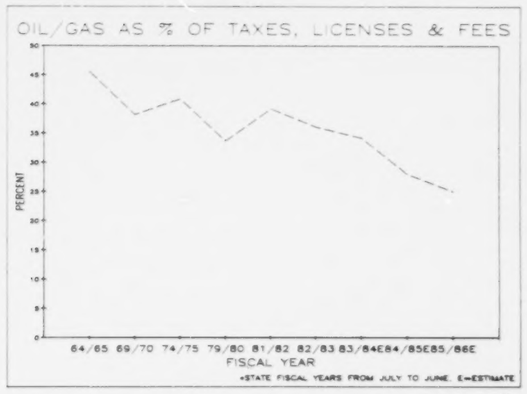


Total oil and gas royalties have experienced more steady growth than total severance taxes on oil and gas, primarily because gas royalty payments are sensitive to natural gas prices, while gas severance taxes are not. Prices of natural gas rose steadily from 1978 to 1983, which helped to offset the negative impact of declining gas production on royalty income.

Bonuses and rentals are more closely related to exploration activity and prospective oil prices and, consequently, have shown more erratic behavior, particularly in the last ten years. Bonus income reached a peak of $276 million in 1979-80, and rentals peaked a year later at $54 million.[3] Both have fallen sharply since that time as falling oil prices have reduced the value of drilling rights in the state.

Another perspective on oil and gas revenue is its relative importance in the overall state tax structure. Extraction revenues as a percentage of total taxes, licenses, and fees are shown in Chart II.[4] From a peak of 49.6 percent in 1965-66, extraction revenues declined gradually until the severance tax increase of 1973. Declining production and relatively moderate price increases again caused the ratio to decline until 1979, when rising oil prices boosted severance tax and mineral income revenues dramatically. As oil and gas prices have slipped in the past two years, the relative role of oil and gas revenues has again declined.

Chart II


OIL/GAS AS % OF TAXES, LICENSES & FEES
PERCENT
64/65 69/70 74/75 79/80 81/82 82/83 83/84E 84/85E 85/86E
FISCAL YEAR
*STATE FISCAL YEARS FROM JULY TO JUNE. E=ESTIMATE

With the tax increases enacted in 1984, and yet another round of oil price reductions in early 1985, the relative role of oil and gas revenues is estimated at 28.0 percent in 1984-85 and 24.8 percent in 1985-86. These projections indicate that in *1985-86 sales taxes will replace oil and gas revenues as the state's single most important revenue source.* (Sales taxes for 1985-86 are projected at $1,284.6 million, or 28.6 percent of total taxes, licenses and fees.)

The relative importance of oil and gas revenues in the more distant future de-

(Continued on back)

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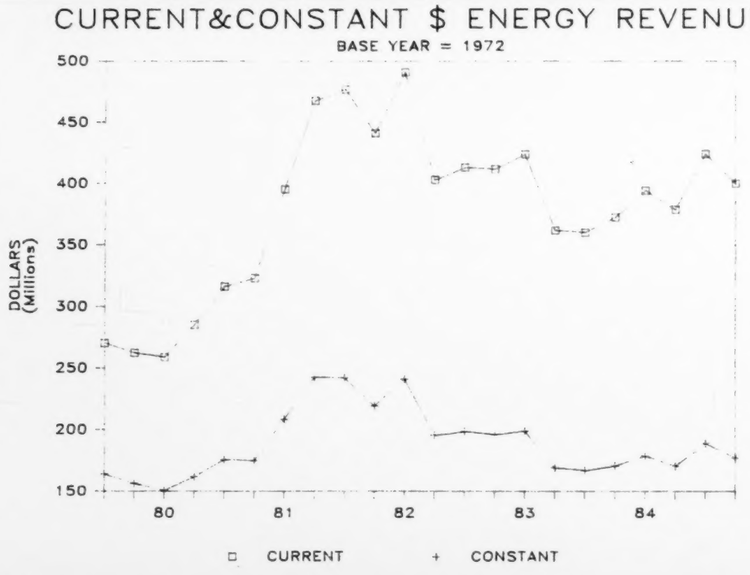

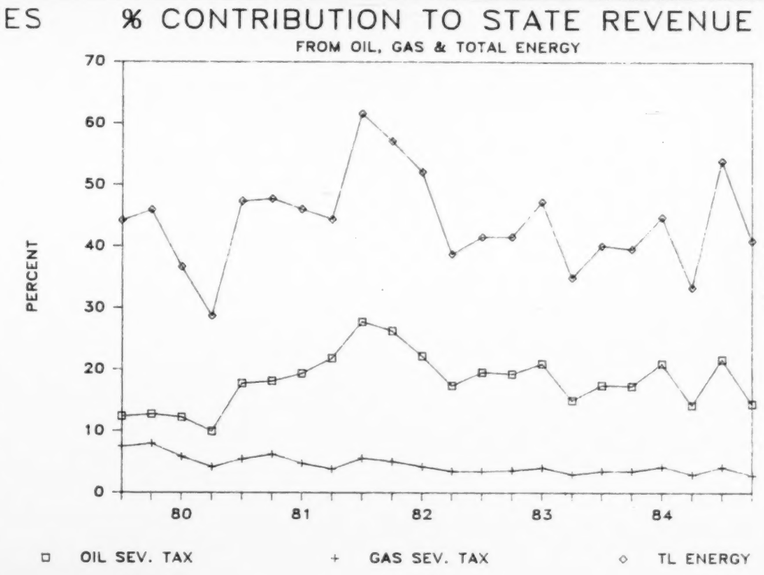

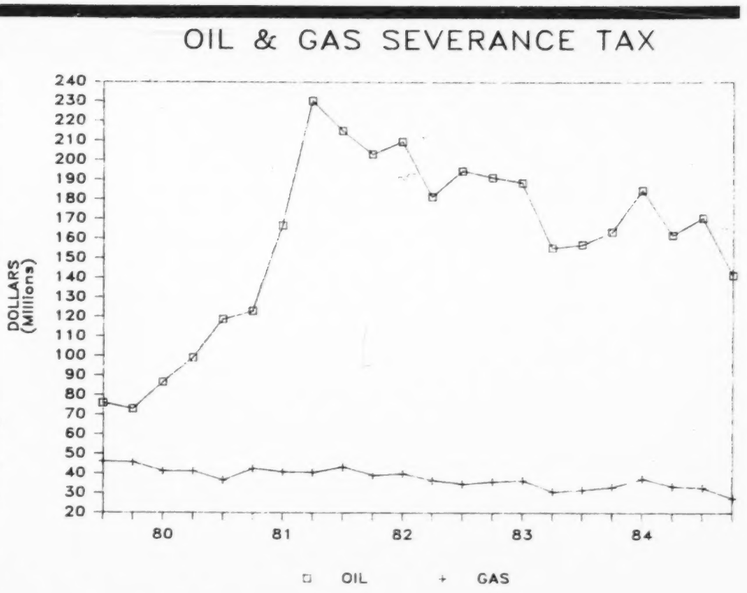

Historical Presentation—Revenues

Figures represent TOTAL
except when otherwise noted

Totals may not add due to rounding

Indicator	79.1	79.2	79.3	79.4	80.1	80.2	80.3	80.4	81.1	81.2	81.3	81.4
PRINCIPAL ENERGY RELATED REVENUES (Millions $)												
Sev. - Oil & Condensate	62.95	64.48	76.09	73.04	86.68	99.19	118.92	123.06	166.65	230.38	215.15	203.11
Sev. - Natural Gas	45.94	49.39	46.01	45.66	41.38	41.24	36.73	42.63	40.84	40.65	43.51	39.22
Bonuses	12.94	17.29	42.89	36.88	19.71	27.76	35.56	35.35	43.22	25.05	40.04	33.31
Rentals	8.16	4.04	4.80	5.17	8.01	5.55	10.85	7.12	11.19	10.53	11.25	13.40
Royalties	45.22	46.05	51.29	51.87	57.15	62.79	65.50	67.15	84.76	110.58	120.69	98.62
Special Fuels Tax	5.10	5.68	5.41	5.97	5.24	5.77	6.03	5.86	5.68	6.29	5.99	6.76
Gasoline Tax	40.79	30.06	43.02	42.67	38.49	40.89	41.65	40.38	40.66	41.21	38.69	45.02
Nat. Gas Franchise Tax	1.26	1.44	0.97	1.07	1.85	1.97	1.32	1.35	1.89	2.70	1.60	1.55
Total Energy Revenues	223.26	218.69	270.81	262.60	259.08	427.01	316.81	323.40	395.87	467.70	477.19	441.49
TOTAL STATE REVENUES (Millions $)	619.56	761.54	611.87	571.82	706.07	994.11	669.23	677.52	860.07	1054.40	774.81	773.01
ENERGY RELATED REVENUES AS % OF STATE TOTAL	36.0	28.7	44.3	45.9	36.7	43.0	47.3	47.7	46.0	44.4	61.6	57.1

Indicator	82.1	82.2	82.3	82.4	83.1	83.2	83.3	83.4	84.1	84.2	84.3	84.4
PRINCIPAL ENERGY RELATED REVENUES (Millions $)												
Sev. - Oil & Condensate	209.65	181.35	194.67	191.13	188.52	155.38	156.89	163.32	184.80	161.81	170.53	141.30
Sev. - Natural Gas	40.16	36.51	34.78	36.05	36.59	30.92	31.88	33.34	37.56	33.54	32.83	27.36
Bonuses	22.37	14.81	11.63	10.44	10.54	9.75	14.05	12.68	12.32	13.25	23.10	19.29
Rentals	15.31	14.12	12.30	11.91	10.44	7.38	4.41	5.48	4.18	7.12	5.71	4.19
Royalties	153.96	105.58	110.42	112.74	130.98	105.53	102.72	105.64	106.08	110.51	108.65	112.35
Special Fuels Tax	6.08	6.55	6.30	6.57	6.05	7.07	6.93	7.05	7.09	7.94	11.59	14.43
Gasoline Tax	40.13	41.25	40.81	40.09	36.68	42.16	40.33	41.78	38.68	41.79	68.71	78.51
Nat. Gas Franchise Tax	2.39	2.77	2.10	2.34	3.30	3.65	2.85	2.71	3.03	3.02	3.14	2.51
Total Energy Revenues	490.98	403.20	413.29	411.87	424.13	362.15	360.33	372.88	394.71	375.57	424.59	400.70
TOTAL STATE REVENUES (Millions $)	943.28	1040.39	994.86	990.75	897.13	1036.86	898.13	942.81	881.80	1137.56	787.64	978.21
ENERGY RELATED REVENUES AS % OF STATE TOTAL	52.1	38.8	41.5	41.6	47.3	34.9	40.1	39.5	44.8	33.0	53.9	41.0

(Continued from front)

pends largely on the prices of oil and gas. One five-year study has projected that oil and gas revenues will represent only about 21 percent of the tax structure by 1988-89 even with moderate oil price increases.[5] The sensitivity of oil and gas revenues to price changes makes any projection of this sort risky. It does, however, seem almost certain, that, barring dramatic increases in oil and gas prices, *the importance of oil and gas revenues in Louisiana's tax structure will gradually be reduced as production of the state's mineral resources declines.*

Article References

[1]The full rate oil severance tax rate was $.26/bbl from 1964-65 through 1973. Effective in 1974, the tax was changed to 12.5 percent of value. At average 1974 prices, this amounted to a rate of almost $.82/bbl. The natural gas tax rate was $.023/MCF from 1964-65 to 1972. In 1972 it became the greater of 11.5 percent of value or $.033/MCF. Beginning in 1974, it was changed to $.07/MCF. A more complete history of severance tax rates can be found in *Louisiana State Tax Handbook 1969,* Public Affairs Research Council of Louisiana, Baton Rouge, Louisiana.

[2]Severance taxes are not collected on gas which is:
(a) Used for reinjection, storage, repressuring or pressure maintenance.
(b) Vented or flared into the atmosphere.
(c) Used for fuel in the field where produced.
(d) Consumed in the production of natural resources in Louisiana.
(e) Used in the manufacture of carbon black.

[3]The 1979-80 bonus and 1980-81 rental payment were heavily influenced by sales of several properties adjudicated to the state as a result of the Tidelands boundary dispute with the U.S. government. These leases accounted for $138 million of the $276 million bonus revenues received in 1979-1980.

[4]Tax, licenses and fee collections represent the collections available to fund programs in the state's general fund operating budget. It does not include federal funds, agency self-generated revenues (i.e., tuition of colleges), transfers of funds between state agencies or bond revenues for capital outlay purposes. It does include tax collections dedicated to special/purposes as established by law. Chart data are from State of Louisiana Annual Financial Statements for various years. Estimates are from Legislative Fiscal Office data and Revised 1984-85 and preliminary 1985-86 tax, license and fee estimates presented to the Louisiana Joint Legislative Committee on the Budget, February 7, 1985.

[5]"Louisiana's Revenues and Expenditures, a Ten-Year Analysis." Report prepared by the Louisiana Legislative Fiscal Office for the Joint Legislative Tax Study Commission, April 3, 1984 (Revised version). This report assumed oil prices would rise to $36.10 per barrel by 1988-89 and projected an oil and gas revenue ratio of 25.5 percent. It did not, however, include the tax increases effective in 1984-85. These increases were projected to 1988-89 at the same growth rates used in the Fiscal Office study, and the oil and gas extraction revenue was then compared to the enhanced total to obtain the ratio of 21 percent. Of course, if oil prices are less than the assumed $36.10/bbl in 1986, then this ratio would be less.

FOOTNOTES

1. Industrial Sale Price by Major Pipeline Companies.
2. Intrastate A price was computed as the weighted average price charged by Louisiana Intrastate, Monterey, and Acadian gas transmission companies.
3. Intrastate B was computed by adding Texaco (27% market share at 34¢/MCF) to Intrastate A. Data on Texaco was taken from Foster and Associates THE IMPACT OF NGPA ON INTRASTATE MARKETS IN LOUISIANA, 1982. Data on the other three companies was supplied by the Louisiana Public Service Commission.

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Taxes and Revenues

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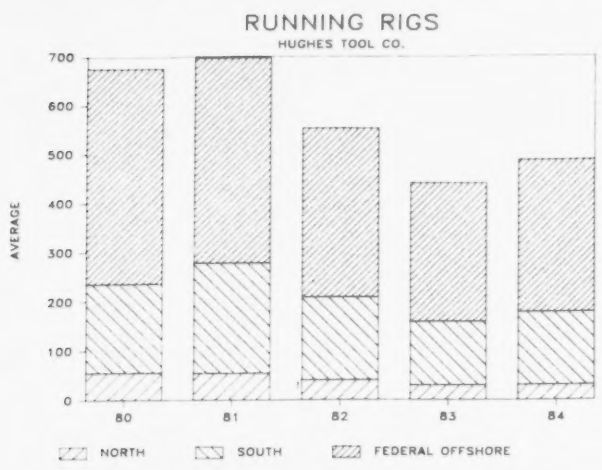
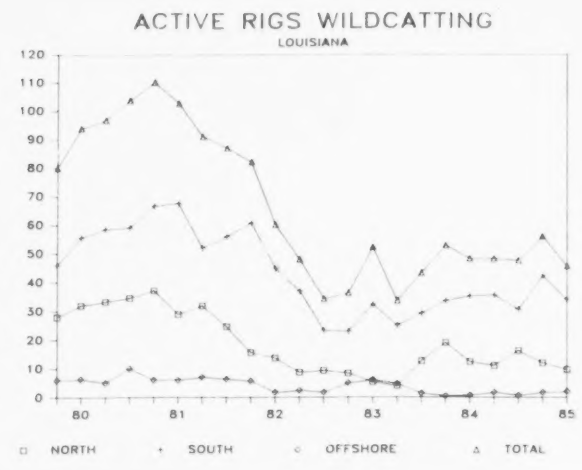
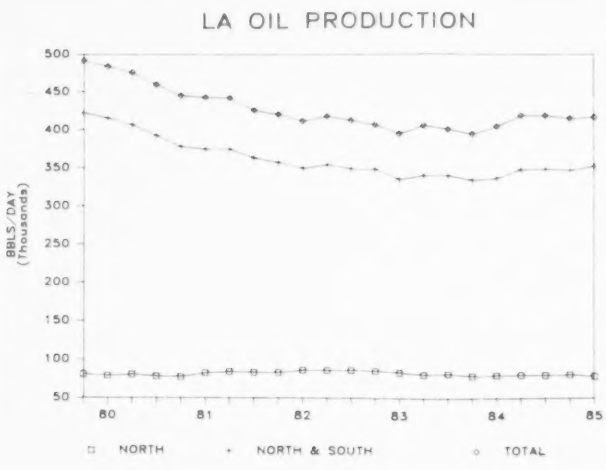
Drilling







Figures represent TOTAL
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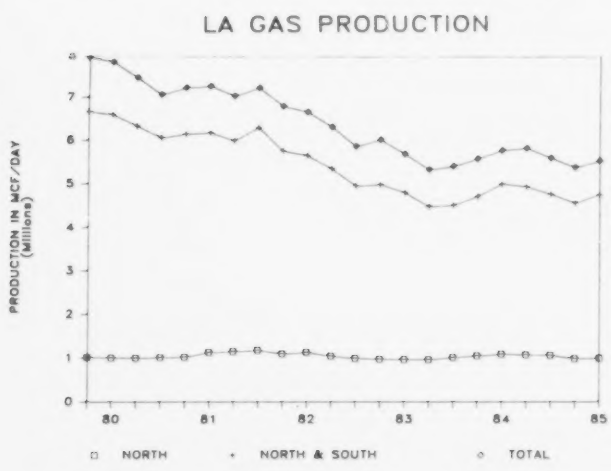
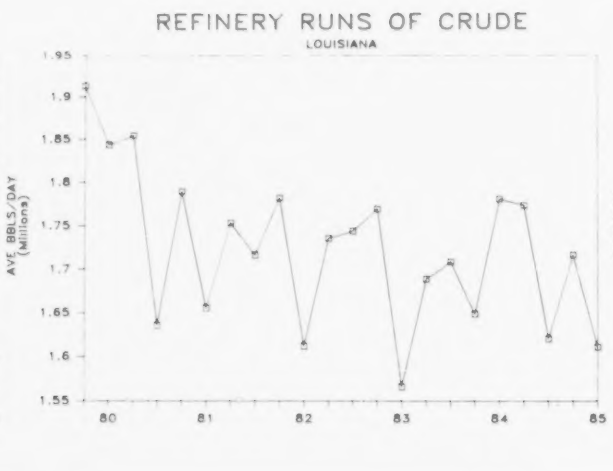
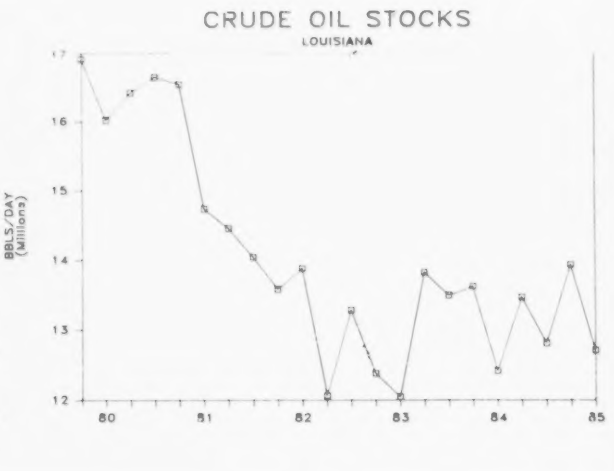
Totals may not add due to rounding

Indicator	1980	1981	1982	1983	1984	1984.2	1984.3	1984.4	Jan	Feb	Mar	1985.1	Year to Date Through Last Month Reported Mar 1984.1	Year to Date Through Last Month Reported Mar 1985.1	% Change
OIL WELLS COMPLETED															
North	926	1034	1098	1405	1926	546	646	388	203	74	272	549	388	549	50.0%
South	292	317	339	315	405	103	106	84	29	27	39	95	112	95	-15.2%
Offshore	20	18	24	22	89	23	18	17	1	4	5	10	31	10	-67.7%
Total	1238	1369	1461	1742	2420	672	770	489	233	105	316	654	509	654	28.5%
GAS WELLS COMPLETED															
North	1301	1212	1021	635	628	127	147	193	57	33	43	133	161	133	-17.4%
South	322	352	381	224	223	56	63	36	18	11	25	54	68	54	-20.6%
Offshore	40	31	39	25	28	9	12	5	0	3	1	4	2	4	100.0%
Total	1663	1595	1441	884	879	192	222	234	75	47	69	191	231	191	-17.3%
DRY HOLES DRILLED															
North	922	893	968	915	1106	264	400	248	68	81	86	213	194	213	9.8%
South	733	885	734	575	716	192	180	185	35	55	58	148	189	148	-22.8%
Offshore	51	52	38	52	41	12	10	9	3	0	4	7	10	7	-30.0%
Total	1606	1840	1760	1542	1863	468	590	422	104	116	148	368	393	368	-6.9%
ACTIVE RIGS-WILDCATTING (Ave.)															
North	34	25	10	10	13	11	16	12	13	8	8	29	12	29	141.7%
South	60	59	32	30	36	36	31	42	36	33	33	102	35	102	191.4%
Offshore	7	6	3	3	1	2	1	2	2	3	1	6	1	6	500.0%
Total	101	90	45	43	50	49	48	56	51	44	42	137	48	137	185.4%
RUNNING RIGS (Ave.,Hughes Tool)															
North	52	59	40	30	30	30	30	29	30	32	26	32	32	32	0.0%
South	171	243	188	128	147	136	137	159	161	147	134	147	158	147	-7.0%
Offshore (Federal)	140	154	136	125	132	120	128	148	150	141	131	141	134	141	5.2%
Total	363	456	344	283	309	286	295	336	350	320	291	320	324	320	-1.2%

Production & Consumption







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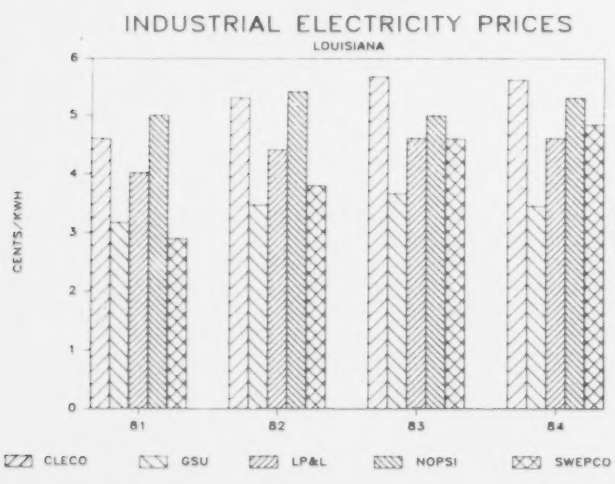
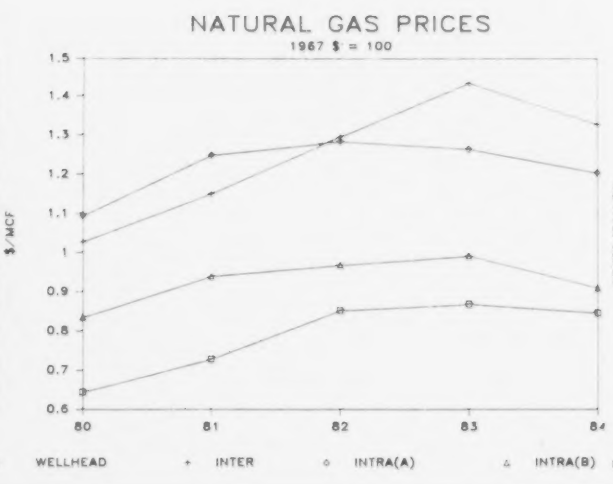
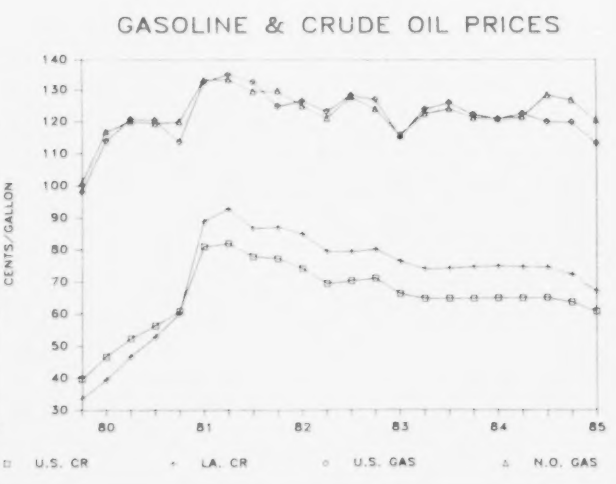
Indicator	1980	1981	1982	1983	1984	1984.2	1984.3	1984.4	Jan	Feb	Mar	1985.1	Year to Date Through Last Month Reported Mar 1984.1	Year to Date Through Last Month Reported Mar 1985.1	% Change
CRUDE OIL PRODUCTION (MBPD) - Ave.															
North	79.1	83.5	86.3	81.6	80.4	80.4	80.1	80.8	78.3	77.8	79.9	78.6	80.1	78.6	-1.9%
South	318.8	283.3	264.5	256.4	264.3	267.2	268.4	265.5	250.4	255.5	315.1	273.7	256.1	273.7	6.9%
Offshore	87.8	65.4	61.4	62.3	69.1	70.5	70.0	68.5	63.8	66.5	61.9	64.1	67.4	64.1	-4.9%
Total	485.8	432.2	412.2	400.3	413.8	418.1	418.5	414.8	392.5	399.8	456.8	416.3	403.6	416.3	3.1%
NATURAL GAS PRODUCTION (BCFPD) - Ave.															
North	1.00	1.13	1.03	0.98	1.04	1.06	1.05	0.97	1.02	0.96	0.98	0.98	1.08	0.98	-9.3%
South	5.27	4.92	4.18	3.62	3.75	3.86	3.89	3.57	3.78	3.90	3.67	3.75	3.90	3.75	-3.8%
Offshore	1.11	1.02	0.98	0.97	0.83	0.89	0.84	0.81	0.75	0.81	0.75	0.77	0.77	0.77	0.0%
Total	7.38	7.07	6.20	5.48	5.62	5.81	5.58	5.35	5.55	5.57	5.38	5.50	5.75	5.50	-4.3%
REFINERY RUNS (MMBPD) - Ave.	1.78	1.72	1.71	1.65	1.72	1.77	1.62	1.71	1.48	1.64	1.70	1.61	1.78	1.61	-9.6%
CRUDE OIL STOCK (MMBBLS)-Ave.	15.4	14.2	12.9	13.2	13.1	13.4	12.8	13.9	15.0	10.9	12.1	12.7	12.4	12.7	2.4%
GASOLINE CONSUMP. (Mil. Gal.)															
Louisiana	2,091	2,103	2,145	2,151	2,142	592	492	527	165	170	169	504	531	504	-5.1%
U.S.	108,340	104,158	102,735	104,231	108,248	27,443	27,708	27,661	--	--	--	--	25,047	--	--
ELECTRICITY CONSUMPTION (GWh)*															
Residential	17,459	18,118	17,882r	17,351	18,550	3,978	6,281	4,191	1,338	1,569	1,209	4,116	4,220	4,116	-2.5%
Commercial	9,128	9,591	9,959r	10,008	10,941	2,567	3,191	2,726	862	875	889	2,586	2,437	2,586	5.3%
Industrial	25,175	25,318	24,894r	23,836	25,900	6,633	6,592	6,348	2,038	1,995	1,898	5,919	6,327	5,919	-6.4%
Other	3,751	4,117	4,052r	4,072	4,247	1,082	1,147r	1,008	318	303	311	933	1,010	933	-7.6%
Total	55,513	56,144	56,897r	55,267	59,638	14,180	17,191r	14,273	4,555	4,742	4,237	13,534	13,994	13,534	-3.3%
ELECTRICITY PRODUCTION (GWh)*															
Gas Generated	40,955	38,948	35,584	28,311	29,360	7,541	8,983	8,764	2,275	2,019	1,773	6,067	6,092	6,067	-0.4%
Oil Generated	4,788	2,635	940	356	140	12	13	32	44	9	2	55	83	55	-33.7%
Coal Generated	0	1,528	4,998	8,377	9,830	2,510	3,801	2,194	1,110	1,137	1,152	3,399	2,225	3,399	52.8%
Total Generated	45,743	44,111	41,532	37,044	39,330	10,063	11,877	8,990	3,429	3,165	2,927	9,521	8,400	9,521	13.3%

* 1 GWh = 1 million KWh r = Revised

Prices & Revenues







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Indicator	1980	1981	1982	1983	1984	1984.2	1984.3	1984.4	Jan	Feb	Mar	1985.1	Year to Date Through Last Month Reported Mar 1984.1	Year to Date Through Last Month Reported Mar 1985.1	% Change
ELEC. PRICES (Cents/KWH) - Ave.															
Industrial															
CLECO	3.8	4.6	5.3	5.7	5.6	5.7	5.9	4.8	4.9	4.6	4.5	4.7	5.0	4.7	-21.7%
GSU	2.7	3.2	3.5	3.7	3.5	3.4	3.7	3.3	4.2	4.9	5.3	4.9	3.4	4.9	41.2%
LP&L	3.0	4.0	4.4	4.6	4.8	4.5	4.8	4.8	4.1	4.4	4.4	4.3	4.4	4.3	-2.3%
NOPSI	3.9	5.0	5.4	5.0	5.3	5.2	5.4	5.8	5.3	5.4	4.9	5.2	5.1	5.2	2.0%
SWEPCO	2.8	2.8	3.8	4.6	4.9	4.6	5.1	5.2	4.8	4.6	4.6	4.7	4.5	4.7	4.4%
WELLHEAD PRICE OF OIL ($/BBL) - Ave.															
Louisiana	19.84	35.54	32.45	30.02	29.87	29.81	29.54	29.92	27.47	26.36	26.75	26.86	30.02	26.86	-10.5%
U.S.	21.61	31.80	28.54	26.13	25.86	26.01	26.03	25.47	24.29	23.63	23.86	23.93	26.01	23.93	-8.0%
NAT. GAS PRICES ($/MCF)-Ave.															
Wellhead - U.S.	1.59	1.98	2.47	2.59	2.63	2.62	2.61	2.64	2.59	2.64	2.69	2.62	2.56	2.62	-1.5%
Interstate Indet. Sale Price[1]	2.54	3.13	3.76	4.28	4.12	4.11	4.07	4.18	4.19	4.15	4.00	4.11	4.13	4.11	-0.5%
Intrastate (A)[2]	2.70	3.40	3.71	3.77	3.74	3.72	3.72	3.72	3.71	3.65	3.56	3.64	3.80	3.64	-4.2%
Intrastate (B)[3]	2.08	2.56	2.80	2.98	2.93	2.91	2.91	2.91	2.80	2.76	2.69	2.75	2.87	2.75	-4.2%
PRINCIPAL ENERGY RELATED REVENUES (Millions $)															
Sev. - Oil & Condensate	427.9	815.3	776.8	864.1r	853.5	181.8	170.8	136.3r	61.9	54.9	47.3	164.0	184.8	164.0	-10.7%
Sev. - Natural Gas	182.0	184.3	147.5	132.74r	131.3	33.5	32.8	27.36	11.1	12.5	10.0	33.7	37.6	33.7	-10.3%
Bonuses	118.4r	141.6r	59.3r	47.0r	68.0	19.3	29.1	19.3	2.2	5.3	4.1	11.6	12.3	11.6	-5.3%
Rentals	31.6	48.4	53.7	27.7r	21.2	7.1	5.7	4.2	1.4	1.1	1.7	4.2	4.2	4.2	-0.7%
Royalties	252.5	414.7	492.7	444.9r	436.1	109.0r	109.7	112.4	35.4	34.3	34.3	104.0	106.1	104.0	-1.9%
Special Fuels Tax	22.5	24.7	25.5	27.1r	41.1	8.0	11.8	14.4	5.1	4.5	3.8	13.2	7.1	13.2	85.9%
Gasoline Tax	161.4	165.6	162.3	161.0r	227.7	41.8	68.7	78.5	26.8	24.4	26.2	77.5	38.7	77.5	100.3%
Nat. Gas Franchise Tax	6.3r	7.5	8.8	12.5r	11.7	3.0	3.2	2.5	0.6	1.8	0.6	3.0	3.0	3.0	-1.0%
Total Energy Revenues	1153.1r	1750.4r	1717.4r	1517.2r	1560.5	377.5r	424.8	396.0r	134.5	138.9	127.8	401.1	393.8	401.1	1.9%
TOTAL STATE REVENUES (Millions $)	3647.0	3482.8	3969.3	3775.0	3795.2	1137.0	787.8	878.2	375.8	328.3	303.5	1008.4	981.8	1008.4	14.4%
ENERGY RELATED REVENUES AS % OF STATE TOTAL	38.8	61.4	43.3	40.2	42.0	33.2	53.8	40.4	35.8	42.2	42.1	39.8	44.7	39.8	-10.8%
CONSUMER PRICE INDEX - U	248.8	272.4	288.1	298.4	311.1	309.7	313.1	315.4	316.1	317.4	318.8	317.4	306.4	317.4	3.6%
CONSUMER PRICE INDEX - ENERGY - U	381.1	410.8	418.1	418.8	423.8	425.9	428.2	422.5	414.5	411.4	418.6	414.2	418.3	414.2	-1.0%

U = Unadjusted r = Revised

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Louisiana Energy Indicators

Center for Energy Studies

Louisiana State University Summer 1985

DRILLING COST CHANGES IN LOUISIANA

Fred M. Wrighton
Associate Executive Director
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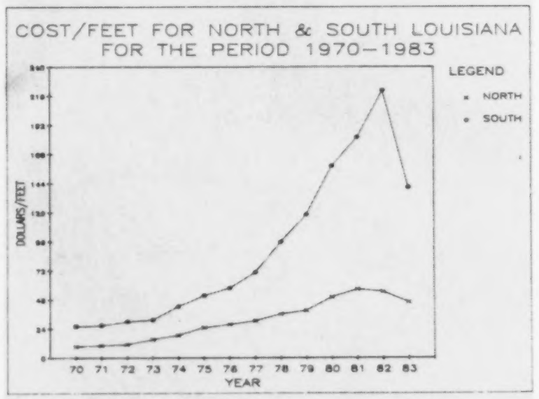
The cost of drilling an oil or gas well is an integral part of exploration and development of hydrocarbon resources in Louisiana. Not surprisingly, there have been changes over the past few years in the cost of drilling in both north and south Louisiana, as illustrated in Chart 1. What is surprising, however, is the magnitude of these changes. The cost per foot of drilling a well in north Louisiana increased by 502 percent from 1970 to 1981; in south Louisiana the cost per foot increased by 745 percent from 1970 to 1982. Meanwhile, the United States as a whole, showed an increase of 166 percent from 1970 to 1981 (Producer Price Index). Obviously, only a small part of Louisiana's increases can be attributed to the general inflationary price trend that has been endemic in the United States. The peak in drilling costs in late 1981 and early 1982 was a result of "demand-pull" price increases by drilling contractors and oil service companies.

Chart I



Drilling Costs

The number of rotary rigs active in Louisiana (including offshore) rose from an average of 204 in 1970 to 456 in 1981; most of the activity occurred from 1976 to 1981. What inspired this increased activity from 1970 to 1978 was the tripling of oil prices. Then, in 1978, oil prices tripled again.

The crucial variable in the cost of drilling a well is not the number of drilling rigs that are active but the percentage of available drilling rigs that are active. The Reed Tool Company reports both active and available rigs for regions that include south and north Louisiana, and these figures can be used to compute rig utilization rates. In the south Louisiana region, the rig utilization rate was 74.4 percent in 1970 and 96.7 percent in 1981; this high percentage provided the environment for rig price rationing. A similar condition existed in the north Louisiana region, with rig utilization rates rising from 57 percent in 1970 to 99.2 percent in 1981. This was during a period when the national land rig census rose from 1,662 in 1970 to 4,316 in 1981. National utilization peaked in 1982 with 5,139 rigs active.

It is not difficult to understand why the cost of drilling, bid up because of demand, declined precipitously when the demand was relieved. By 1983, the price of oil had fallen from $31.84 to $26.19, and this was reflected by the decline in the average number of active rigs from 59 to 30 in north Louisiana and from 243 to 128 in south Louisiana. Rig utilization rates for 1983 dropped to 31.6 percent in north Louisiana and 34.5 percent in south Louisiana. It was a buyer's market that year, with the cost of drilling in north Louisiana 19 percent less than it had been in 1981; in south Louisiana drilling costs were down by 36 percent. Since 1983, most observers agree with Anderson and Funk[1] that, in large part, drilling costs have stabilized and that there will be only small increases (compared to historical changes) ranging from zero to 17 percent depending on the depth of the well.

Rig Efficiency

One result of the decline in drilling activity has been increased drilling efficiency. When suppliers had to "stack" rigs, they selected the newer, more efficient rigs for active status and stacked the older, less efficient rigs. The same was true of personnel. As layoffs began, the general rule of "first hired, last fired" prevailed, thus ensuring that the drilling crews were composed of the most experienced workers. This allowed the size of drilling crews to be reduced and, in some cases, improved drilling output per man hour. In general, **sharply rising drilling activity appears to decrease drilling efficiency, while sharply falling activity leads to more efficient drilling.**

A measure of drilling efficiency is the number of wells drilled during one year divided by the average number of active rigs during that year. Table 1 shows this ratio from 1979 to 1984 for both north and south Louisiana. Remember that the first three years of this period were characterized by sharply rising rig activity rates and the last three years by sharply falling rates.

Table 1

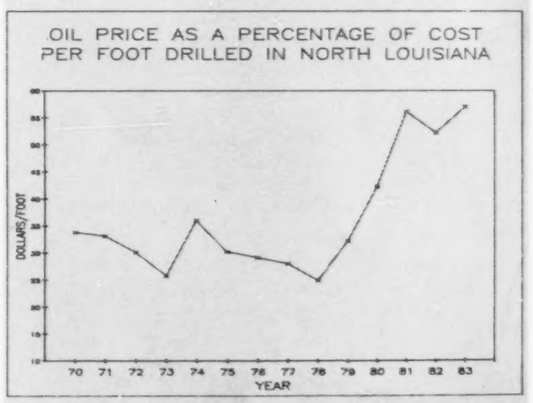
Rig Efficiency: Number of Wells Drilled Per Active Rig

Year	North Louisiana	South Louisiana
1979	63	7.7
1980	59	7.9
1981	53	6.4
1982	78	8.7
1983	87	8.7
1984	122	9.1

The great difference between the number of wells drilled per rig in north and south Louisiana is because of the difference in well depth for the two regions. The average well depth in north Louisiana is approximately 3,400 feet; in south Louisiana, the average depth is approximately 10,000 feet. It simply takes longer to drill a well in the south than it does in the north.

The important element in Table 1 is that rig efficiencies were generally lower from 1979 through 1981 and generally higher from 1982 to 1984. Changes in rig efficiencies make rig activity a somewhat misleading indicator of actual drilling activity. An extreme case occurred in north Louisiana when both 1983 and 1984 showed an active rig count of 30. Although that figure would appear to indicate no drilling growth, the actual number of wells drilled increased from 2,595 in 1983 to 3,360 in 1984—a 41 percent increase!

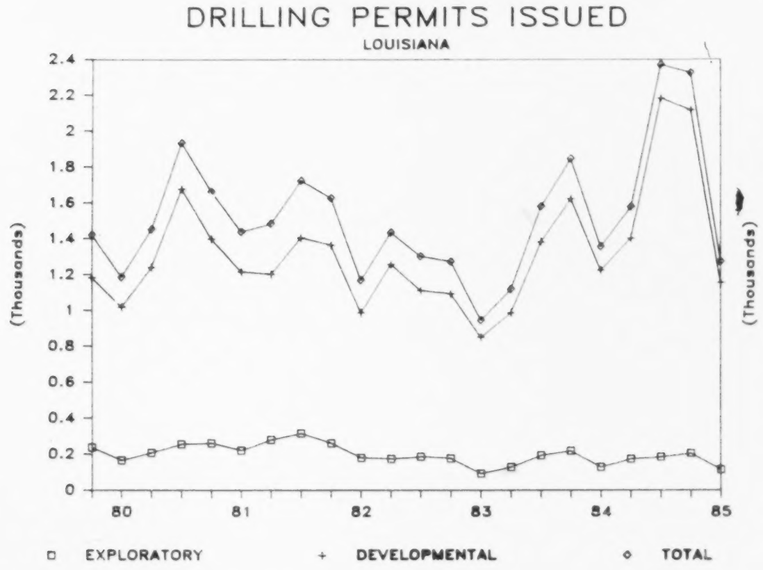
Chart II

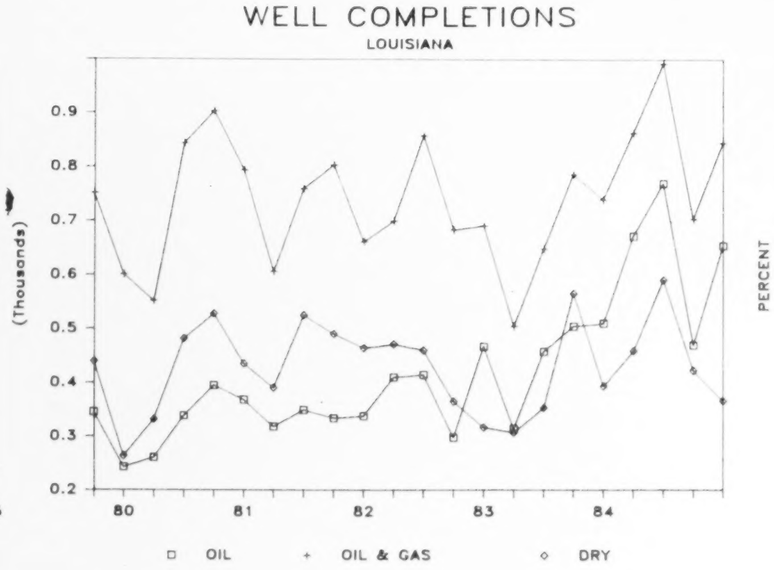

OIL PRICE AS A PERCENTAGE OF COST
PER FOOT DRILLED IN NORTH LOUISIANA
DOLLARS/FOOT
70 71 72 73 74 75 76 77 78 79 80 81 82 83
YEAR

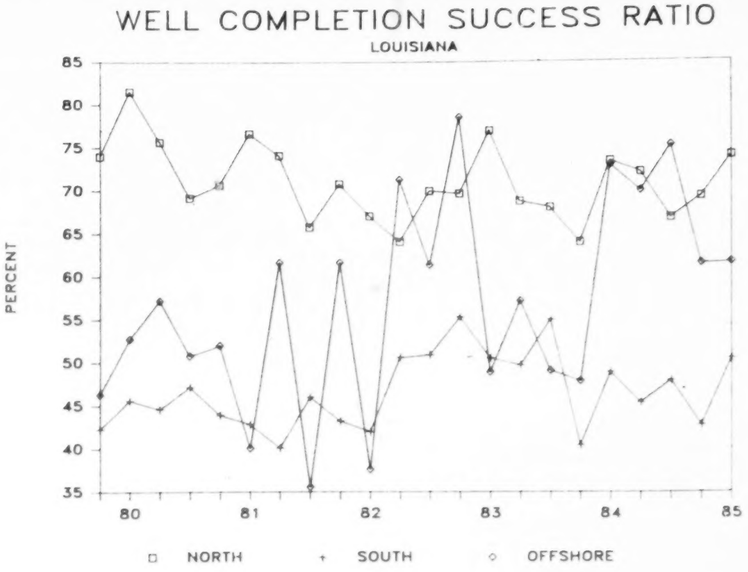
Increased Oil Well Activity

The substantial increase in the number of wells drilled in north Louisiana comes as a surprise, considering the recent history of oil prices.

(Continued on back)







Historical Presentation—Drilling

Figures represent TOTAL except when otherwise noted

Totals may not add due to rounding

Indicator	78.2	78.3	78.4	80.1	80.2	80.3	80.4	81.1	81.2	81.3	81.4	82.1
DRILLING PERMITS ISSUED												
Exploratory	135	209	238	167	211	25[illegible]	263	223	282	318	263	182
Developmental	832	1130	1184	1020	1242	1676	1399	1217	1204	1408	1366	988
Total	967	1339	1422	1187	1453	1935	1662	1440	1486	1726	1629	1170
EXPLORATORY WELLS DRILLED - TOTAL												
North	38	52	90	57	40	100	100	106	71	122	110	88
South	86	113	114	118	78	101	85	164	129	170	161	146
Offshore	48	61	42	45	55	54	59	65	40	42	85	60
Total	172	226	246	220	171	255	244	335	240	334	356	294
WELL COMPLETIONS												
North	351	654	782	562	515	984	1008	828	803	858	850	719
South	298	300	385	276	345	341	385	383	371	398	412	388
Offshore	27	26	25	27	24	21	39	18	22	29	32	18
Total	676	980	1192	865	884	1326	1432	1229	996	1285	1294	1125

Indicator	82.2	82.3	82.4	83.1	83.2	83.3	83.4	84.1	84.2	84.3	84.4	85.1
DRILLING PERMITS ISSUED												
Exploratory	176	189	180	95	131	197	222	131	178	187	208	118
Developmental	1260	1113	1093	852	988	1384	1625	1225	1403	2184	2117	1157
Total	1436	1302	1273	947	1119	1581	1847	1356	1579	2371	2325	1273
EXPLORATORY WELLS DRILLED - TOTAL												
North	88	70	103	41	41	54	104	82	47	75	70	64
South	121	104	109	87	112	112	95	88	115	82	80	85
Offshore	67	72	65	71	175	138	82	85	92	67	47	78
Total	276	246	277	199	328	304	281	235	254	224	197	227
WELL COMPLETIONS												
North	788	811	689	680	515	750	1010	721	937	1193	809	895
South	359	370	337	303	268	225	318	369	341	349	285	295
Offshore	24	37	22	21	28	26	24	43	44	40	31	21
Total	1171	1318	1048	1004	811	1001	1352	1133	1322	1582	1125	1211

(Continued from front)

The national average price for domestic wellhead crude fell from $31.84/bbl in 1981, to $28.52/bbl in 1982, to $26.19/bbl in 1983, and to $25.88/bbl in 1984. Even more suprising is that the increased well completions were concentrated in the oil well category. From 1983 to 1984 completed oil wells in north Louisiana increased by 84.3 percent.

A partial explanation to this enigma lies in the price of oil relative to drilling costs and in the reserve position of north Louisiana oil and gas operators. The price of oil per barrel divided by the average cost per foot drilled, expressed in percentage, shows the relative relationship between the two factors. Chart 2 shows this percentage for north Louisiana from 1970 through 1983 (the most recent available estimate of the average cost per foot of drilling). Until 1979, the oil price as a percentage of the drilling cost varied between 25 and 36 percent. Then, in 1983, the percentage rose to a high 57 percent because drilling costs dropped more sharply than oil prices. If finding rates had remained constant since 1979, drilling an oil well today would generally be better investment than it was prior to or in 1979.

The oil and gas business is just like any other business: total cash assets should improve over time. This is especially true for operators who depend on reserves as collateral for bank loans. The second explanation for the increase in oil well completions involves the change in the price of crude oil. Each $1.00 of reserves in 1981 was worth only $.84 in 1984. Operators may have increased their drilling activity to cope with the erosion of the cash value of their reserves by increasing the physical size of their reserves.

Footnotes

[1]Anderson, T. and Funk, V. T., "Shallow gas, oil wells increase," *Oil and Gas Journal,* **Vol. 82, No. 53, December 31, pg. 156-162.**

FOOTNOTES

1 Industrial Sale Price by Major Pipeline Companies
2 Intrastate A price was computed as the weighted average price charged by Louisiana Intrastate, Monterey, and Acadian gas transmission companies.
3 Intrastate B was computed by adding Texaco (27% market share at 34¢ MCF) to Intrastate A. Data on Texaco was taken from Foster and Associates THE IMPACT OF NGPA ON INTRASTATE MARKETS IN LOUISIANA, 1982. Data on the other three companies was supplied by the Louisiana Public Service Commission.

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